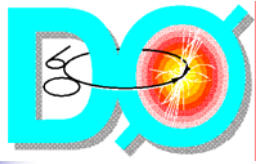


# Calorimeter Shifter Tutorial

**Norm Buchanan**  
*for the Calorimeter Group*

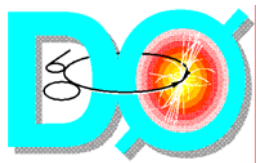
March 2, 2005



# Outline

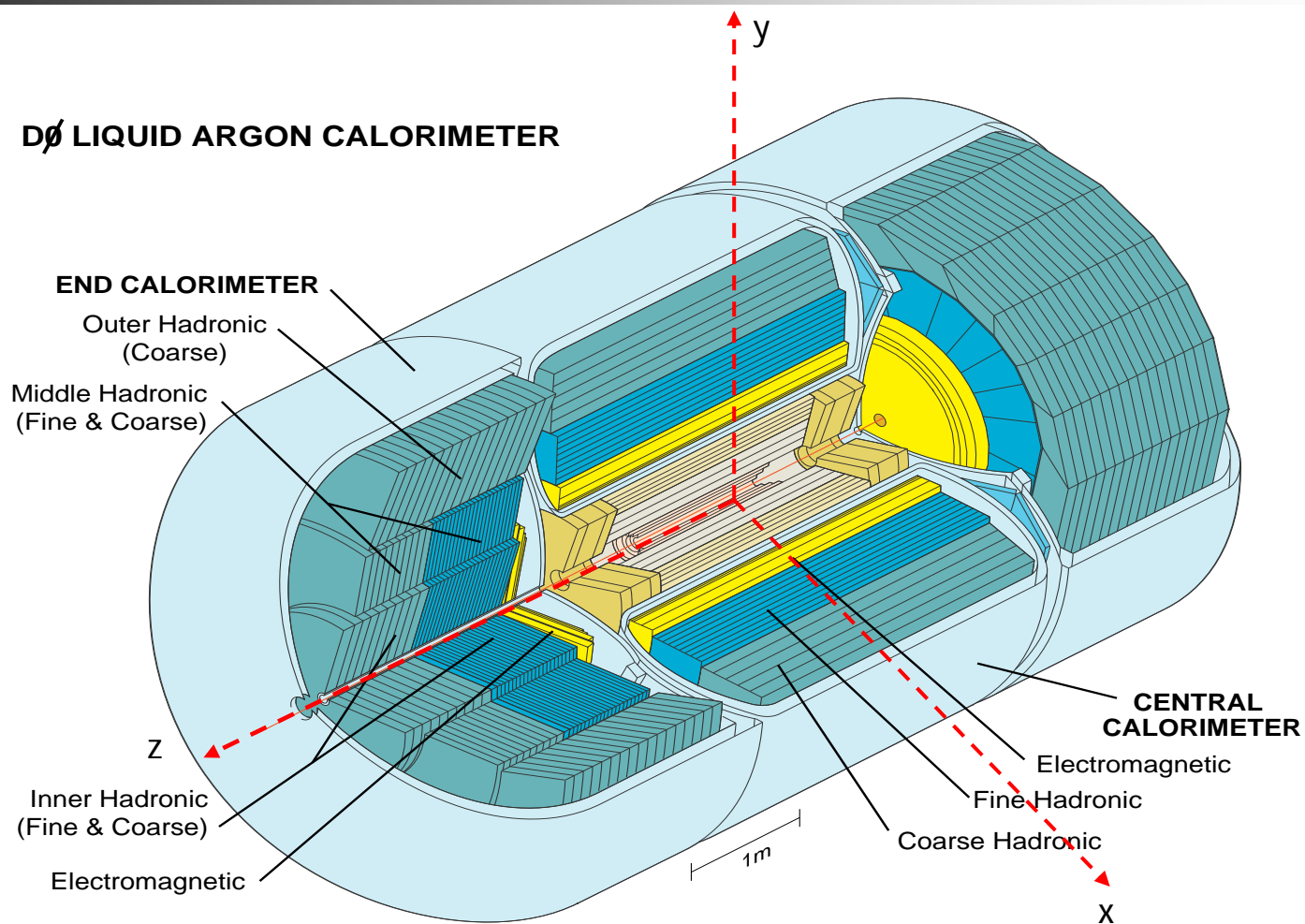
---

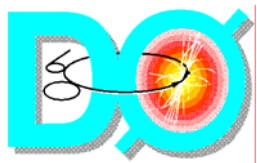
- Calorimeter Overview
- Shifter Tasks
- GUI Descriptions
- To do during store
- To do between stores



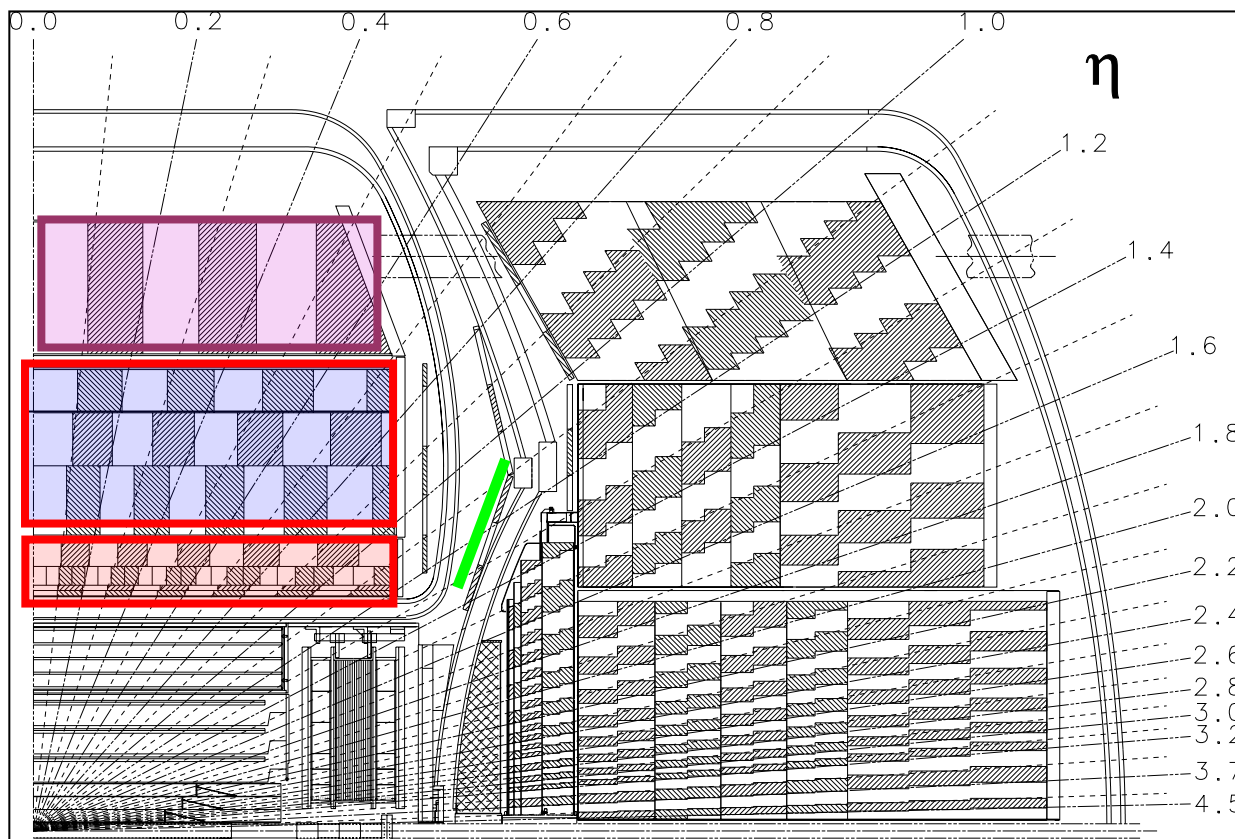
# Calorimeter Overview

## DØ LIQUID ARGON CALORIMETER





# Overview cont...



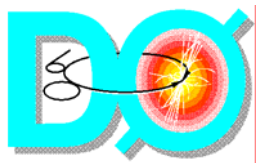
~55,000 readout channels

## Liquid Argon

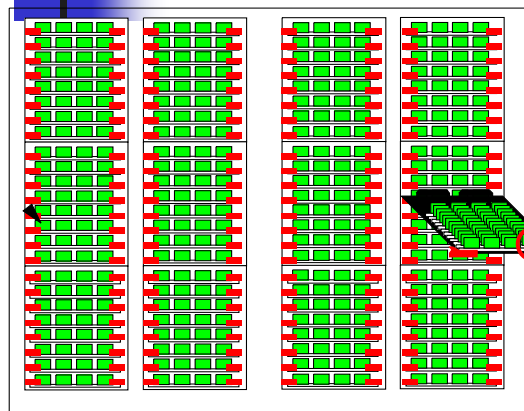
- Electromagnetic
- Fine hadronic
- Coarse hadronic

## Scintillating

- Inter-cryostat detector

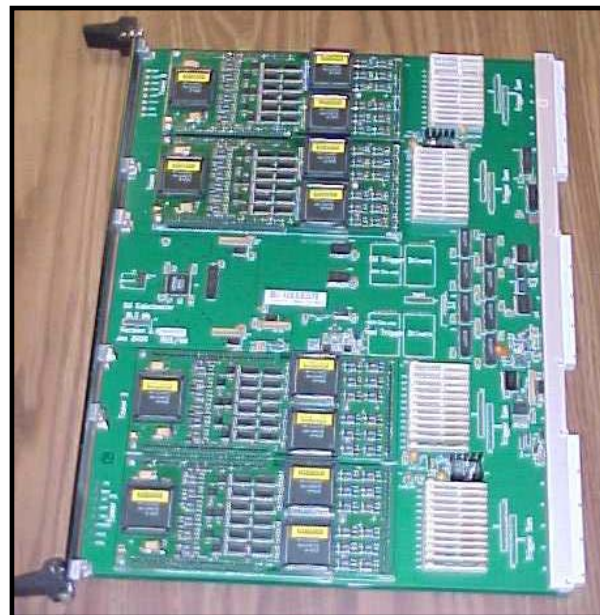


# Precision Readout

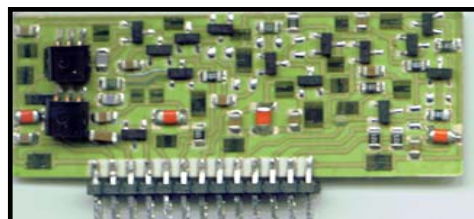


preamp crates

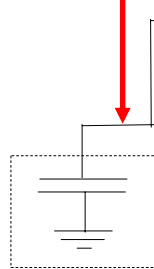
BLS card



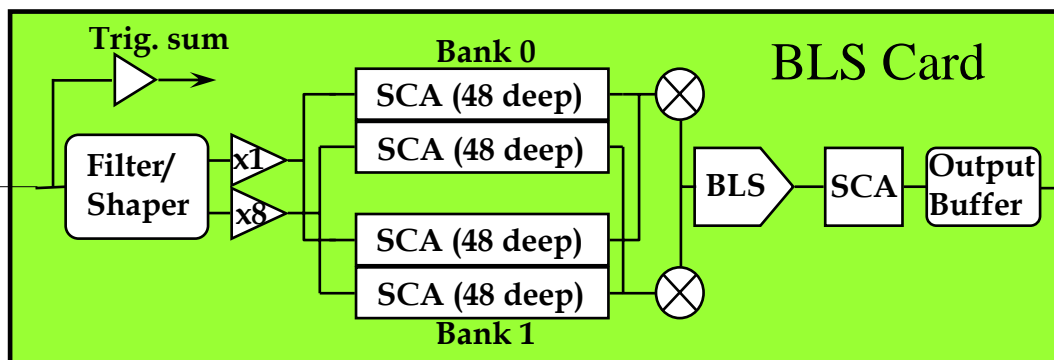
preamp

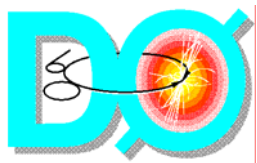


pulser signal injection

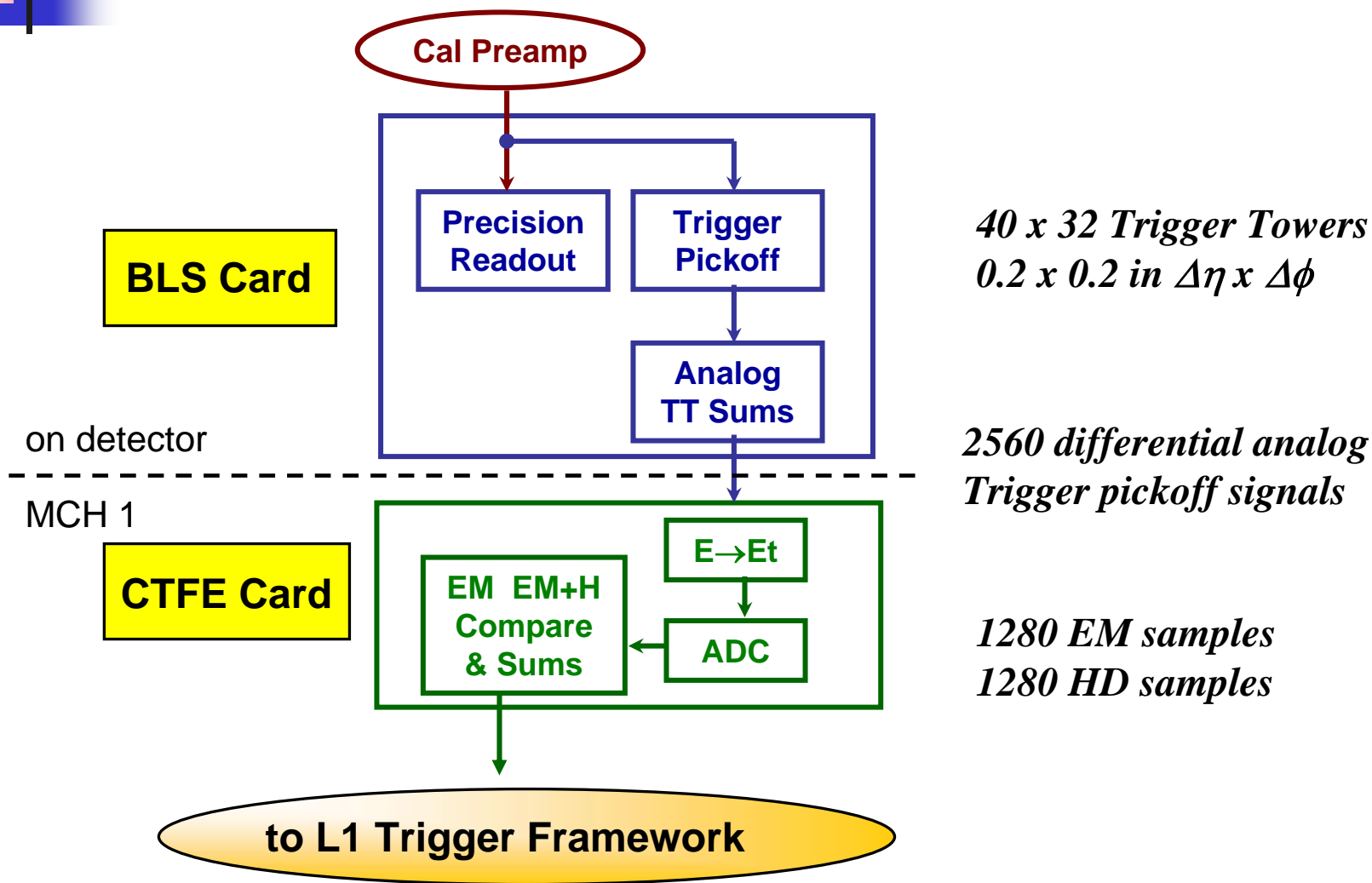


CAL cell

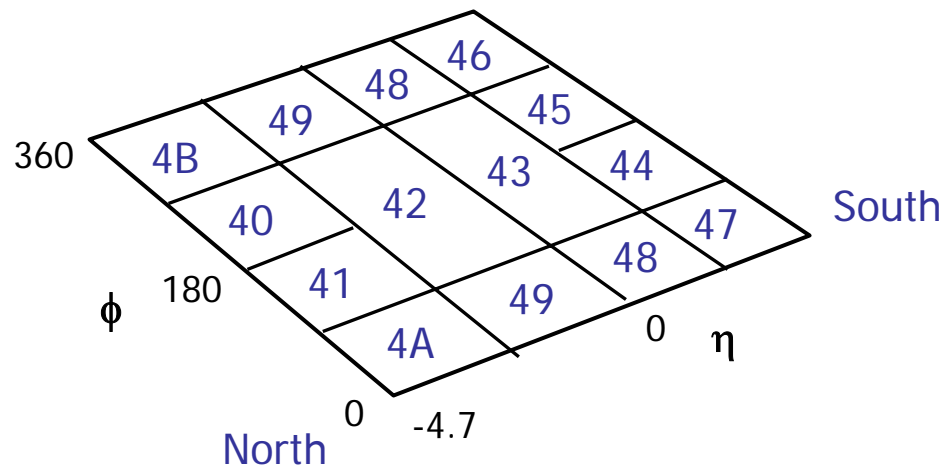




# L1 Calorimeter Trigger







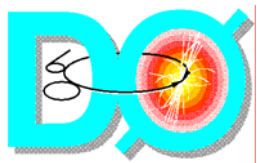
### Level 3 readout crate

### MCH 3

## ADC cards (and PSs)

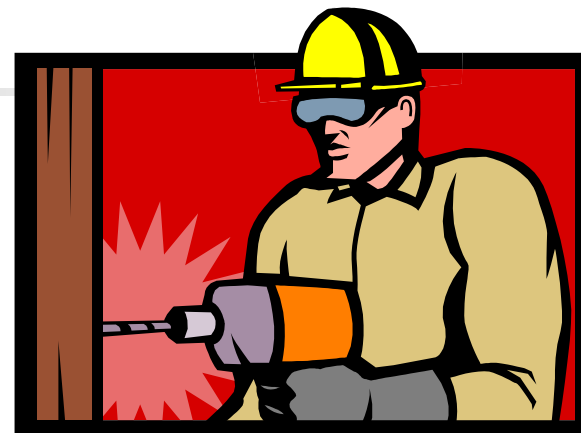
## 12 Crates

1 PS per 2 ADC crates

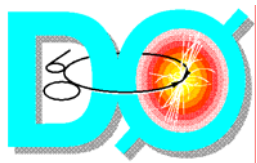


# Shifter's duties

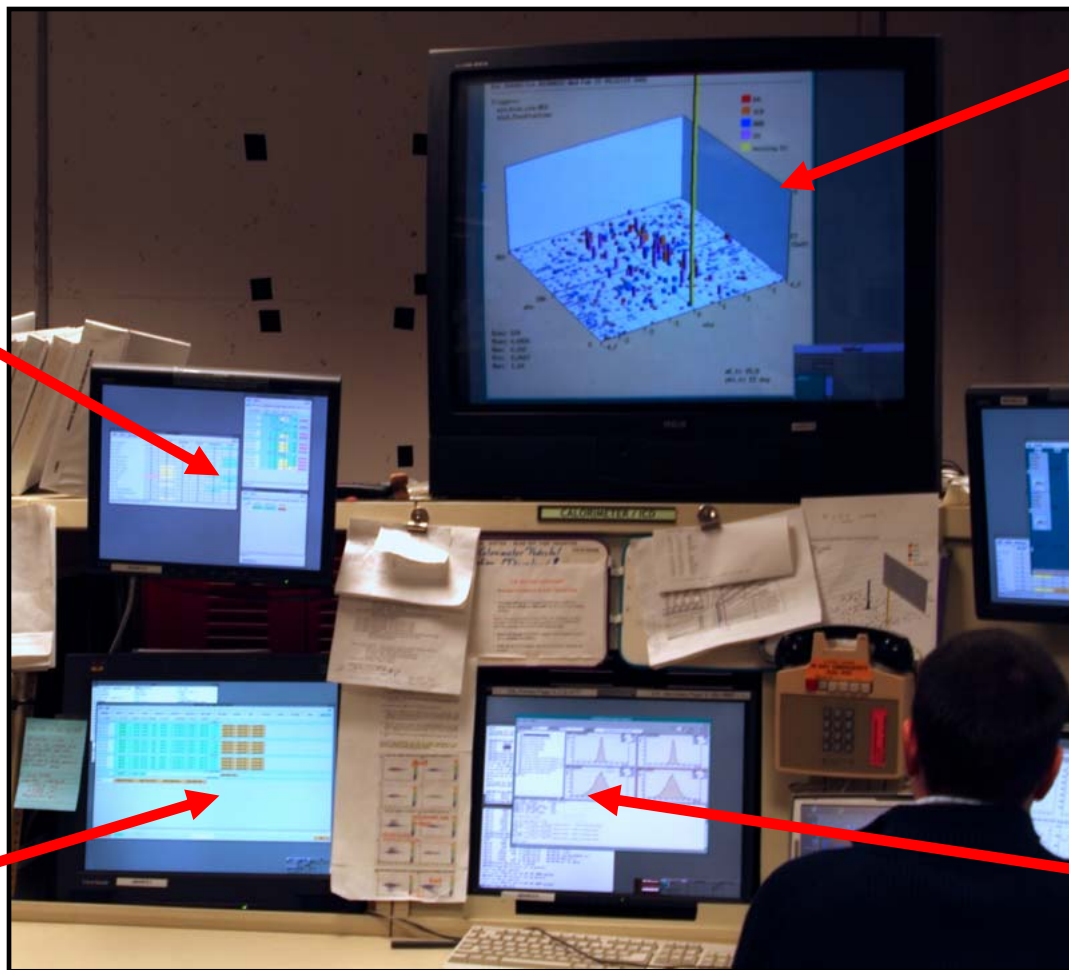
- Be familiar with the console
- Run and watch the examines
  - Cal data quality
  - L1 CAL examine
- Make sure all GUIs are opened
  - Supply GUI, alarm display, taker, logbook etc...
- Look for alarms or unusual conditions (pink=trouble)
- Use the logbook
  - fill out the end of run summary and paste plots
  - note anything out of the ordinary (such as calling expert)
- Take pedestal calibration runs between stores
- Assist expert with taking NLC calibrations







# Calorimeter Console

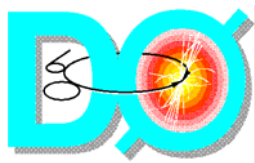


Alarms/Status

Lego plot  
 $E_T(\eta, \phi)$

Cal utilities

Examines  
and taker



# CALMUO Web Page

**D0 Muon System Group Homepage - Microsoft Internet Explorer**

Address: <http://www-d0online.fnal.gov/www/groups/calmuo/>

**calorimeter muon shift instructions**

- experts on-call
- shift schedule
- useful links

[examine programs](#)  
[electronic logbook](#)  
[cal & muon run checklist](#)

**cal muo**

**calorimeter menu**

- [calorimeter main page](#)
- [calorimeter shifter's guide](#)
- [calorimeter shifter's quick guide \(only brief steps\)](#)
- [Frequently asked questions](#)
- [video tutorials \(2 \\* 26min\)](#)

**What to do during Calorimeter/Muon Shift**

phase	calorimeter	muon
in general	<ul style="list-style-type: none"><li>make sure that the D0 data taking is as efficient as possible and the quality is high. Therefore:<ul style="list-style-type: none"><li>read the available <a href="#">calorimeter</a> and <a href="#">muon</a> documentation</li><li>get used to the control applications</li><li>be aware of potential problems so that you can quickly find solutions</li></ul></li><li>make sure that relevant information are written into the electronic logbook</li><li>contact <a href="#">experts</a> in the case of problems</li></ul>	
at the begin of your shift	<ul style="list-style-type: none"><li>talk to the previous shifter about the status of the calorimeter and muon systems - learn about recent problems and whether there are special situations for specific subsystems and how to handle them</li><li>talk to the shift Captain about the general status and plans of data taking for D0</li></ul>	

**cal prepare for run**

- after the shift

**Calorimeter Online Web Page - Microsoft Internet Explorer**

Address: [http://www-d0online.fnal.gov/www/groups/cal/cal\\_main.html](http://www-d0online.fnal.gov/www/groups/cal/cal_main.html)

**Calorimeter group Web page**

**Shifter's corner:**

- Current PowerSupply Status
- Calorimeter Shifter's Guide: Word format, pdf, html - courtesy Mike Tuts
- Calorimeter Shifter Schedule
- Last 72 hours of CAL e-log [Last week](#) [2 weeks](#)

**Calorimeter Group's Task Lists:**

- Current Task List

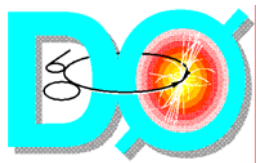
**Useful Links**

- Beams Division Ch13
- Calorimeter Home Page
- Calorimeter Group Meetings (agenda and slides of talks)
- Calorimeter Electronics Upgrade Documentation
- Pulsar Online Calibration Page D0-France
- ICD Home Page

*Send corrections to [Leslie Groer](#), [Ursula Bassler](#), [Nirmalya Parua](#)*  
*Last modified: Thu, June 05 16:34:54 CDT 2003*

<http://d0server1.fnal.gov/projects/calorimetelectronics/www>

- Shifter's guide
- On-call contacts
- Shift schedule
- Useful links



# start\_cal

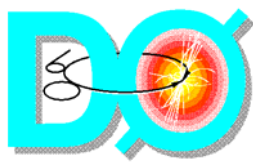
A script that properly starts cal utilities

## What you need to know

- `start_cal all` (starts all standard GUIs)
- `start_cal` (lists all possible arguments, when in doubt use this)

## Some useful commands

- `start_cal supply` (starts Supply GUI)
- `start_cal alarm` (starts alarm watcher)
- `start_cal hv` (starts high voltage GUI)
- `start_cal DORun` (change to d0run user)
- `start_cal rmi` (starts rack monitor GUI)
- `start_cal ioc` (starts IOC monitoring)
- `start_cal dq_calo` (cal examine)
- `start_cal dq_monitor` (cal examine)
- `start_cal l1examine_d0ol23`
- `start_cal l1examine` (l1cal examine)
- `start_cal calib` (calibration GUI)



# GUIs – Alarms

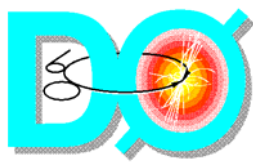
"start\_cal alarm"

File	View	Settings					Help
	MAJOR	MINOR	INVALID	ACKED	DISABLED	GOOD	
CAL Preamp	0	4	0	0	0	8	
CAL BLS N	0	0	0	0	0	0	
CAL BLS C	0	0	0	0	0	0	
CAL BLS S	0	0	0	0	0	1	
CAL BLS BCK N	0	0	0	0	0	1	
CAL BLS BCK C	0	0	0	0	0	0	
CAL BLS BCK S	0	1	0	0	0	0	
CAL ADC Temp	0	4	0	0	1	0	
CAL PA Temp	0	4	0	0	8	0	
CAL Fanout	0	0	0	0	0	19	
CAL ADC	0	0	0	0	0	0	
Pulser	0	1	0	0	1	3	
CAL HV	0	2	0	0	50	0	
CAL MCH Protection	0	0	0	0	0	0	
CAL Platform Protection	0	0	0	0	0	0	
CAL Controls	0	9	0	0	0	0	
Status: Connection to server opened							

CAL HV :Disabled Alarms	
CALC_HVC_17C/VOLT	
CALC_HVC_45C/VOLT	
CALC_HVC_LAR0/STATE	
CALC_HVC_LAR0/VOLT	
CALC_HVC_LAR1/STATE	
CALC_HVC_LAR1/VOLT	
CALC_HVC_LAR2/STATE	
CALC_HVC_LAR2/VOLT	
CALC_HVC_LAR3/STATE	
CALC_HVC_LAR3/VOLT	
CALC_HVC_LAR4/STATE	
CALC_HVC_LAR4/VOLT	
CALC_HVC_LAR5/STATE	
CALC_HVC_LAR5/VOLT	
CALC_HVC_LAR6/STATE	
CALC_HVC_LAR6/VOLT	
CALC_HVC_LAR7/STATE	
CALC_HVC_LAR7/VOLT	
CALN_HVC_LAR0/STATE	
CALN_HVC_LAR0/VOLT	
CALN_HVC_LAR1/STATE	
CALN_HVC_LAR1/VOLT	
CALN_HVC_LAR2/STATE	
CALN_HVC_LAR2/VOLT	

SHOW  
GUIDANCE  
CONTROL  
ENABLE  
ENABLE ALL  
CLOSE

- Watch out for pink (major) alarms
- Check that disabled are "known" – disabled list



# General Monitoring

"start\_cal rmi"

"start\_cal ioc"

File				View			Help
Central	North	West	South	East	Cath	Tunn	
Rack	Status	RM	DSTAT	Power			
PC00	Normal	Normal	Reset				
PC01	Normal	Normal	Reset				
PC02	Normal	Normal	Reset				
PC03	Normal	Normal	Reset				
PC04	Normal	Normal	Reset				
PC05	Normal	Normal	Reset				
PC06	Normal	Normal	Reset				
PC07	Normal	Normal	Reset				
PC16	Normal	Normal	Reset				
PC17	Normal	Normal	Reset				
PC18	Normal	Normal	Reset				
PC19	Normal	Normal	Reset				
PC20	Normal	Normal	Reset				
PC21	Normal	Normal	Reset				
PC22	Normal	Normal	Reset				
PC23	Normal	Normal	Reset				
Status:							
Reconnect							

Platform

File View Help

MCH1S MCH1N MCH2S MCH2N MCH3S MCH3N DAB

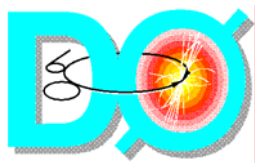
Rack	Status	RM DSTAT	Power
M300	Normal	Normal	Reset
M301	Normal	Normal	Reset
M302	Normal	Normal	Reset
M303	Normal	Normal	Reset
M306	Normal	Normal	Reset
M307	Normal	Normal	Reset
M308	Normal	Normal	Reset
M310	Normal	Normal	Reset
M311	Normal	Normal	Reset
M312	Normal	Normal	Reset

Status:

Reconnect

MCH (3 for CAL)

File View						Help				
CAL	CFT	CTL	LUM	MUC	IUO/R	SMT	MT/R	FPD	STT	Test
IOC Node		GSId	CPU %	Mem %	FD %					
MCH Vertical Interconnect										
d0olctl37		13	87	38	Reboot					
ADC Crates										
d0olctl24		4	31	34	Reboot					
Platform										
d0olctl09		13	44	38	Reboot					
d0olctl11		18	65	38	Reboot					
ICD High Voltage										
d0olctl26		46	60	36	Reboot					
d0olctl27		46	60	36	Reboot					
d0olctl33		34	62	44	Reboot					
CAL High Voltage										
d0olctl42		58	64	38	Reboot					
d0olctl43		50	60	38	Reboot					
d0olctl44		48	60	38	Reboot					
d0olctl45		Undef	Undef	Undef	Reboot					
Status: <input type="text"/>										
Reconnect			Reboot							



# Supply GUI

"start\_cal  
supply"

FileView

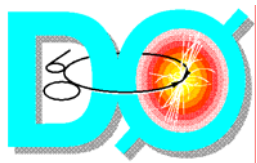
supply

Help

Preamp	BLS N	BLS C	BLS S	BLS BCK N	BLS BCK C	BLS BCK S	ADC Temp	PA Temp	Fanout	ADC	LAr Temp	Pulser	PLS Mode	Mode	Mode Shift												
Device	+12VA V	+12VA I	+12VB V	+12VB I	+8VC V	+8VC I	+8VD V	+8VD I	+8VE V	+8VE I	+8VF V	+8VF I	-6VG V	-6VG I	-6VH V	-6VH I	Vic Tmp	Shn Tmp	Mag F	D1 Tmp	D2 Tmp	STAT	RM				
EC North																											
CALN_LVCP_PA00P	12.37	16.37	12.37	16.10	8.36	17.86	8.35	17.69	8.34	15.83	8.39	16.03	-6.28	23.52	-6.25	23.67	29.74	31.40	-10.01	38.57	29.79	0x3	0x0	On	Off	Reset	
CALN_LVCP_PA00S	12.34	-0.48	12.35	0.33	8.30	0.18	8.29	0.48	8.30	-0.23	8.33	0.06	-6.19	0.16	-6.15	-0.16	17.92	13.43	1.71	9.28	15.14	0x2	0x0	On	Off	Reset	
CALN_LVCP_PA01P	12.40	15.98	12.39	16.69	8.38	17.74	8.19	17.25	8.21	15.59	8.34	15.82	-6.23	23.47	-6.24	23.16	31.69	35.11	-9.03	30.76	33.69	0x3	0x0	On	Off	Reset	
CALN_LVCP_PA01S	12.30	0.11	12.35	0.13	8.33	0.31	8.10	0.40	8.13	0.38	8.30	-0.06	-6.13	0.18	-6.13	0.10	18.31	16.06	-6.10	11.23	7.32	0x2	0x0	On	Off	Reset	
CALN_LVCP_PA10P	12.59	16.33	12.44	16.43	8.39	17.75	8.43	17.75	8.47	16.38	8.32	16.11	-6.27	23.61	-6.28	23.28	34.38	39.16	-20.02	42.97	36.13	0x3	0x0	On	Off	Reset	
CALN_LVCP_PA10S	12.48	0.28	12.28	-0.04	8.22	-0.13	8.31	-0.23	8.33	-0.11	8.23	0.40	-6.18	-0.09	-6.14	-0.43	18.60	18.21	-1.22	10.25	12.21	0x2	0x0	On	Off	Reset	
CALN_LVCP_PA11P	12.31	16.50	12.49	16.35	8.45	17.85	8.44	18.09	8.49	16.33	8.37	16.06	-6.26	23.49	-6.26	23.46	33.69	33.69	-4.39	38.09	34.18	0x3	0x0	On	Off	Reset	
CALN_LVCP_PA11S	12.17	0.04	12.57	0.21	8.27	-0.23	8.30	-0.06	8.34	0.28	8.24	-0.01	-6.12	-0.18	-6.13	0.16	17.53	18.70	-0.24	8.30	10.25	0x2	0x0	On	Off	Reset	
CC																											
CALC_LVCP_PA02P	12.35	16.49	12.36	16.63	8.25	17.21	8.18	16.54	8.29	17.02	8.12	17.07	-6.24	23.12	-6.14	23.38	34.47	36.43	-11.23	34.18	38.09	0x3	0x0	On	Off	Reset	
CALC_LVCP_PA02S	12.23	0.31	12.51	-0.09	8.18	0.21	8.11	-0.01	8.19	0.06	8.05	-0.33	-6.06	0.11	-6.00	-0.18	18.31	17.43	-0.24	15.14	14.16	0x2	0x0	On	Off	Reset	
CALC_LVCP_PA03P	12.42	16.20	12.41	16.33	8.39	17.50	8.39	17.36	8.39	17.42	8.35	17.08	-6.26	23.82	-6.28	23.47	33.11	34.33	9.28	46.39	38.09	0x3	0x0	On	Off	Reset	
CALC_LVCP_PA03S	12.32	0.28	12.31	-0.23	8.32	-0.01	8.31	-0.01	8.30	0.48	8.26	-0.21	-6.10	-0.38	-6.18	-0.70	18.70	15.58	14.40	8.79	10.74	0x2	0x0	On	Off	Reset	
CALC_LVCP_PA08P	12.39	16.69	12.43	15.78	8.36	17.76	8.38	17.37	8.40	17.44	8.33	17.27	-6.31	23.38	-6.24	24.06	31.59	32.76	6.59	35.64	36.62	0x3	0x0	On	Off	Reset	
CALC_LVCP_PA08S	12.33	-0.11	12.39	0.06	8.30	-0.13	8.31	-0.11	8.30	-0.18	8.30	0.13	-6.18	0.21	-6.18	-0.01	18.80	18.21	8.54	15.14	13.18	0x2	0x0	On	Off	Reset	
CALC_LVCP_PA09P	12.40	16.59	12.33	16.37	8.37	17.71	8.36	17.18	8.37	17.49	8.34	17.35	-6.32	23.52	-6.34	23.94	32.86	34.03	0.24	25.88	35.64	0x3	0x0	On	Off	Reset	
CALC_LVCP_PA09S	12.37	-0.01	12.36	0.12	8.29	-0.12	8.29	0.02	8.30	0.04	8.27	-0.27	-6.20	0.42	-6.22	0.12	18.75	17.68	-5.37	8.79	12.70	0x2	0x0	On	Off	Reset	
EC South																											
CALS_LVCP_PA04P	12.39	16.44	12.40	16.93	8.39	17.53	8.40	17.31	8.43	15.99	8.41	16.04	-6.32	24.00	-6.24	23.68	30.57	36.82	1.46	38.09	30.27	0x3	0x0	On	Off	Reset	
CALS_LVCP_PA04S	12.32	0.28	12.37	0.29	8.29	-0.31	8.30	0.40	8.32	0.00	8.33	0.26	-6.23	0.04	-6.14	0.16	18.12	18.80	16.85	17.09	16.11	0x2	0x0	On	Off	Reset	
CALS_LVCP_PA05P	12.67	16.59	12.65	16.87	8.43	18.48	8.41	18.38	8.43	16.44	8.45	16.70	-6.30	23.44	-6.26	23.46	31.35	33.69	15.14	30.76	26.37	0x3	0x0	On	Off	Reset	
CALS_LVCP_PA05S	12.71	-0.06	12.69	0.57	8.33	0.00	8.33	0.11	8.37	-0.07	8.36	-0.28	-6.18	-0.31	-6.16	0.23	17.82	17.72	13.92	10.25	13.18	0x2	0x0	On	Off	Reset	
CALS_LVCP_PA06P	12.51	16.64	12.51	16.59	8.34	18.08	8.34	17.59	8.37	16.49	8.37	16.44	-6.25	23.62	-6.28	23.69	31.98	36.57	10.01	39.55	37.60	0x3	0x0	On	Off	Reset	
CALS_LVCP_PA06S	12.34	0.46	12.30	-0.46	8.19	-0.27	8.22	0.37	8.25	-0.01	8.25	0.27	-5.94	-0.61	-5.93	0.10	18.55	15.92	-2.44	15.14	12.70	0x2	0x0	On	Off	Reset	
CALS_LVCP_PA07P	12.68	16.42	12.69	17.18	8.55	18.44	8.52	18.79	8.61	17.13	8.53	16.74	-6.41	23.52	-6.39	23.96	32.96	31.40	21.24	38.57	36.62	0x3	0x0	On	Off	Reset	
CALS_LVCP_PA07S	12.34	0.27	12.40	-0.17	8.31	-0.06	8.33	0.52	8.37	0.27	8.32	0.46	-6.19	-0.06	-6.14	-0.60	17.19	16.06	9.52	7.32	13.18	0x2	0x0	On	Off	Reset	
ICD																											
ICD_LVCP_PWD9	12.77	2.48										8.70	5.80	-6.36	3.67			25.05	36.87				0x3	0x0	On	Off	Reset
Global Buttons																											
Global	Turn ON Primary		Turn ON Second		Turn OFF All		Reset All																				
Status:																											
Reconnect	Archiver		Sat Dec 4 22:03:23 2004																			Exit					

Keep an eye on the archiver status!





# Supply GUI cont...

16 pages (TABS) of information

Individual channel

File View Help

Preamp **BLS N** BLS C BLS S BLS BCK N BLS BCK C BLS BCK S ADC Temp PA Temp Fanout ADC LAr Temp Pulser PLS Mode Mode Mode Shift

Device: +7VA I +3VB V +3VB I +3VB I AB Tmp +13VC V +13VC I -12VD V -12VD I CD Tmp +5VE V +5VE I -5.2VF V -5.2VF I EF Tmp STB8 STB4 STAB STCD STEF RM 1 RM 2

	6.98	19.51	-3.03	17.99	33.20	12.83	11.11	-11.95	1.23	35.64	5.00	11.31	-5.18	8.96	34.67	0x40	0x4	0x0	0x0	0x0	0x0		On	Off	Reset
CALN_LVCB_00_0	6.98	19.51	-3.03	17.99	33.20	12.83	11.11	-11.95	1.23	35.64	5.00	11.31	-5.18	8.96	34.67	0x40	0x4	0x0	0x0	0x0	0x0		On	Off	Reset
CALN_LVCB_00_1	6.97	19.60	-3.01	18.03	44.92	12.91	11.27	-11.89	1.32	42.97	5.00	11.72	-5.21	8.99	40.04	0x40	0x4	0x0	0x0	0x0	0x0		On	Off	Reset
CALN_LVCB_00_2	6.92	19.56	-3.04	17.91	36.62	12.86	11.04	-11.99	1.22	40.53	5.02	11.15	-5.17	8.99	38.57	0x40	0x4	0x0	0x0	0x0	0x0	0x0	On	Off	Reset
CALN_LVCB_00_3	7.02	19.75	-3.04	18.12	44.43	12.83	11.43	-12.00	1.28	38.57	4.94	11.31	-5.19	9.19	42.97	0x40	0x4	0x0	0x0	0x0	0x0		On	Off	Reset
CALN_LVCB_00_4	6.97	19.60	-3.02	18.14	37.60	12.89	11.11	-11.95	1.24	34.18	4.98	11.39	-5.18	9.11	33.69	0x40	0x4	0x0	0x0	0x0	0x0		On	Off	Reset
CALN_LVCB_00_5	6.98	19.85	-3.03	18.07	41.50	12.96	11.15	-11.87	1.29	37.60	5.00	11.46	-5.17	9.03	39.55	0x40	0x4	0x0	0x0	0x0	0x0	0x0	On	Off	Reset
ECN SW																									
CALN_LVCB_01_0	7.01	19.56	-3.02	17.91	32.23	12.78	11.04	-11.89	1.25	35.64	4.97	11.66	-5.24	8.86	38.57	0x40	0x4	0x0	0x0	0x0	0x0		On	Off	Reset
CALN_LVCB_01_1	6.95	19.51	-3.03	18.22	33.69	12.78	11.23	-12.01	1.26	34.67	4.99	11.66	-5.19	8.99	36.62	0x40	0x4	0x0	0x0	0x0	0x0		On	Off	Reset
CALN_LVCB_01_2	6.91	19.31	-3.05	17.89	36.62	12.77	10.96	-12.08	1.25	38.57	4.96	11.05	-5.24	9.38	35.16	0x40	0x4	0x0	0x0	0x0	0x0	0x0	On	Off	Reset
CALN_LVCB_01_3	6.95	19.65	-3.01	17.87	40.53	12.81	11.19	-11.96	1.26	33.69	4.99	11.58	-5.22	9.01	34.67	0x40	0x4	0x0	0x0	0x0	0x0		On	Off	Reset
CALN_LVCB_01_4	6.98	19.51	-3.02	18.03	33.69	12.83	11.27	-11.99	1.27	32.71	4.95	11.62	-5.22	9.11	34.67	0x40	0x4	0x0	0x0	0x0	0x0		On	Off	Reset
CALN_LVCB_01_5	7.01	19.65	-3.04	17.95	41.50	12.86	11.19	-11.94	1.24	37.60	4.97	11.00	-5.19	9.01	33.69	0x40	0x4	0x0	0x0	0x0	0x0	0x0	On	Off	Reset
ECN SE																									
CALN_LVCB_10_0	6.94	19.51	-3.00	17.87	39.06	12.89	11.39	-11.96	1.21	42.48	4.95	11.50	-5.18	8.96	36.62	0x40	0x4	0x0	0x0	0x0	0x0		On	Off	Reset
CALN_LVCB_10_1	6.97	19.75	-3.01	18.14	38.09	12.91	11.23	-11.94	1.22	38.57	4.99	11.70	-5.19	9.29	35.64	0x40	0x4	0x0	0x0	0x0	0x0		On	Off	Reset
CALN_LVCB_10_2	6.92	19.36	-3.01	17.79	33.69	12.89	11.35	-11.94	1.23	37.60	4.99	11.66	-5.19	8.86	36.62	0x40	0x4	0x0	0x0	0x0	0x0	0x0	On	Off	Reset
CALN_LVCB_10_3	6.95	19.90	-3.06	18.14	37.60	12.91	11.31	-11.92	1.18	37.60	5.00	11.23	-5.18	9.11	36.62	0x40	0x4	0x0	0x0	0x0	0x0		On	Off	Reset
CALN_LVCB_10_4	6.99	19.85	-3.03	18.07	32.71	12.89	11.46	-11.96	1.28	42.48	4.98	11.82	-5.22	9.19	41.50	0x40	0x4	0x0	0x0	0x0	0x0		On	Off	Reset
CALN_LVCB_10_5	6.93	19.58	-3.01	18.01	34.18	12.82	11.37	-11.98	1.22	36.13	4.97	11.99	-5.19	9.08	36.13	0x40	0x4	0x0	0x0	0x0	0x0	0x0	On	Off	Reset
ECN NE																									
CALN_LVCB_11_0	7.02	19.48	-3.00	17.83	34.18	12.83	11.07	-11.94	1.17	36.62	4.96	11.68	-5.21	8.91	34.18	0x40	0x4	0x0	0x0	0x0	0x0		On	Off	Reset
CALN_LVCB_11_1	6.96	19.41	-3.03	17.87	33.69	12.83	11.23	-11.89	1.20	36.13	4.97	11.84	-5.21	8.90	35.16	0x40	0x4	0x0	0x0	0x0	0x0		On	Off	Reset
CALN_LVCB_11_2	6.95	19.58	-3.05	18.01	40.04	12.77	11.37	-12.02	1.28	40.04	4.97	11.52	-5.22	9.08	40.04	0x40	0x4	0x0	0x0	0x0	0x0	0x0	On	Off	Reset
CALN_LVCB_11_3	6.92	19.34	-3.00	18.18	35.16	12.86	11.15	-11.82	1.22	34.67	5.00	11.45	-5.17	9.01	35.64	0x40	0x4	0x0	0x0	0x0	0x0		On	Off	Reset
CALN_LVCB_11_4	6.96	19.82	-3.00	18.16	38.09	12.97	11.23	-11.91	1.25	37.11	4.98	11.60	-5.19	9.07	38.09	0x40	0x4	0x0	0x0	0x0	0x0		On	Off	Reset
CALN_LVCB_11_5	6.99	19.58	-3.02	18.24	32.23	12.87	11.31	-11.98	1.26	34.18	4.99	11.54	-5.23	9.16	30.27	0x40	0x4	0x0	0x0	0x0	0x0	0x0	On	Off	Reset

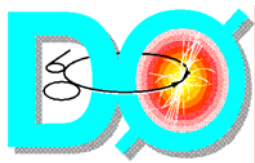
Global Buttons: Turn ON All Turn OFF All Reset All

Status: Plot for CALN\_LVCB\_00\_4/5ID started

Reconnect Archiver Sat Dec 4 20:13:40 2004 Exit

All channels





# Supply GUI cont...

attribute

It's important to be able to give details to expert

channel

Calorimeter Power Supply Monitor - Display \

FileViewHelp

PreampBLS NBLS CBLS SBLS BCK NBLS BCK CBLS BCK SADC TempPA TempFanoutADC

LAr TempPulserPLS ModeModeMode Shift

Device+7VA V-3VB V+13VC V-12VD V+5VE V-5.2VF V

S02 TmpS05 TmpS08 TmpS11 TmpS14 TmpS17 TmpS18 TmpS19 TmpS20 TmpS21 TmpRM

ECN NW

CALN\_CMCR\_00\_06.88-2.9012.91-12.094.90-5.1530.0330.3730.8630.5731.5430.7625.2929.6930.9614.940x0

CALN\_CMCR\_00\_16.86-2.9412.91-12.084.89-5.1328.6628.6129.0029.5928.5225.0031.1530.1824.320x0

CALN\_CMCR\_00\_26.88-2.9012.83-12.054.82-5.0926.7127.4426.6627.4427.4427.0523.9326.6626.4623.540x0

CALN\_CMCR\_00\_36.82-2.9112.91-12.114.87-5.1222.5622.1722.3623.9724.1223.3417.0921.3921.7818.120x0

CALN\_CMCR\_00\_46.89-2.9212.83-12.054.83-5.1120.8021.9722.6122.3623.3423.1418.6522.3622.5617.770x0

CALN\_CMCR\_00\_56.88-2.9212.91-12.054.85-5.1120.0220.6121.1923.1423.3422.7520.6123.5422.9517.870x0

ECN SW

CALN\_CMCR\_01\_06.76-2.9612.79-12.134.81-5.1329.3929.7930.0829.2029.9830.1825.4928.1230.0322.800x0

CALN\_CMCR\_01\_16.73-2.9612.74-12.124.85-5.1127.5928.5627.2927.0029.3528.9624.3727.7828.6624.170x0

CALN\_CMCR\_01\_26.71-2.9412.76-12.124.83-5.1025.6326.1226.8125.2426.2226.6123.5827.3926.4222.220x0

CALN\_CMCR\_01\_36.86-2.9612.77-12.054.85-5.1122.5623.1424.1223.3425.1023.5818.5125.1024.5116.890x0

CALN\_CMCR\_01\_46.82-2.9212.83-12.054.85-5.1321.5822.0221.6322.9523.9323.1418.4622.3624.1218.260x0

CALN\_CMCR\_01\_56.87-2.9212.87-12.404.82-5.0521.1921.1921.1921.5822.3621.7818.6523.5821.7817.870x0

ECN SE

CALN\_CMCR\_10\_06.89-2.9012.86-12.064.86-5.1328.2728.7628.9629.0529.5429.0524.1728.5630.0322.710x0

CALN\_CMCR\_10\_16.79-2.9212.78-12.024.86-5.0424.7627.5926.9026.8127.6926.9022.5127.2929.7422.220x0

CALN\_CMCR\_10\_26.83-2.9212.76-12.144.87-5.0725.6326.2227.2926.3227.4925.9323.6826.4228.1722.900x0

CALN\_CMCR\_10\_36.85-2.9112.94-12.104.93-5.1321.9222.9024.2723.2923.7823.2918.8024.2727.9817.720x0

CALN\_CMCR\_10\_46.85-2.9112.82-12.024.91-5.0922.5121.9221.4422.2222.7122.7117.8222.1222.6119.580x0

CALN\_CMCR\_10\_56.81-2.9112.94-12.024.90-5.0820.3621.7321.3422.7123.4921.7317.4323.8822.7117.630x0

ECN NE

CALN\_CMCR\_11\_06.82-2.9212.79-12.094.81-5.1128.4229.2028.8628.0329.3929.6924.7129.9831.5422.170x0

CALN\_CMCR\_11\_16.82-2.9412.83-12.094.85-5.1126.6627.6428.2227.8328.0327.4423.7329.3928.2223.540x0

CALN\_CMCR\_11\_26.82-2.9412.84-12.094.83-5.1726.2726.9525.8826.8627.2526.6624.1226.2726.2723.140x0

CALN\_CMCR\_11\_36.88-2.9312.80-12.104.83-5.1121.7323.6823.7823.8823.4923.8818.6022.6122.8017.330x0

CALN\_CMCR\_11\_46.83-2.9312.82-12.064.85-5.1120.6522.3121.7323.1022.9023.0019.3822.3122.7117.430x0

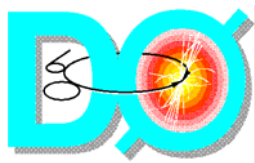
CALN\_CMCR\_11\_56.85-2.9312.80-12.104.83-5.1220.9522.1221.5323.0022.3122.5118.9923.2923.0017.330x0

Status:

ReconnectArchiver

Sun Mar 16 13:32:19 2003

Exit



# Supply GUI – pulser

Calorimeter Power Supply Monitor Display -

File View Help

Preamp	BLS N	BLS C	BLS S	BLS BCK N	BLS BCK C	BLS BCK S	ADC Temp	PA Temp	Fanout	ADC	LAr Temp	Pulser	PLS Mode	Mode	Mode Shift
--------	-------	-------	-------	-----------	-----------	-----------	----------	---------	--------	-----	----------	--------	----------	------	------------

Device DAC Cmd En Delay 0-5 Channel Enable 0-95

EC North

Pulser 00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pulser 01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pulser 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pulser 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

CC

Pulser 02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pulser 03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pulser 08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pulser 09	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

EC South

Pulser 04	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pulser 05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pulser 06	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pulser 07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ICD

Pulser 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-----------	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

ICD LED

Delay (ns) 0.0 0.0 0.0 0.0 DC Offset (mV) 0.0 0.0 0.0 0.0

crate

driving voltage

Pattern status: 0="OFF" 1="ON"

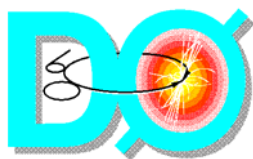
**All "OFF" for physics running!**

Status:

Reconnect Archiver

Sun Mar 16 13:39:06 2003

Exit



# Supply GUI – Shifter Mode

Pedestal subtracted  
zero suppression (cut: 1.5  $\sigma$ )

Pedestal version

Calorimeter Power Supply Monitor Display

File View Help

Preamp	BLS N	BLS C	BLS S	BLS BCK N	BLS BCK C	BLS BCK S	ADC Temp	PA Temp	Fanout	ADC	LAr Temp	Pulser	PLS Mode	Mode	Mode Shift
Crate															
TC MODE STATUS L3TRAN ADC ERR BLS MODE ADC MODE PED VRS PULSER															
EC North															
CRATE 0x40	Normal	0x10	0x3c7b	0x0	Normal	0 Sign Sup	0xdc	Pulser Off	0.08	Reset T&C	Reset ADC	Reset VBD			
CRATE 0x41	Normal	0x10	0x3c7c	0x0	Normal	0 Sign Sup	0xdc	Pulser Off	0.10	Reset T&C	Reset ADC	Reset VBD			
CRATE 0x4a	Normal	0x10	0x3c7c	0x0	Normal	0 Sign Sup	0xdc	Pulser Off	0.07	Reset T&C	Reset ADC	Reset VBD			
CRATE 0x4b	Normal	0x10	0x3c7e	0x0	Normal	0 Sign Sup	0xdc	Pulser Off	0.08	Reset T&C	Reset ADC	Reset VBD			
CC															
CRATE 0x42	Normal	0x10	0x3c7e	0x0	Normal	0 Sign Sup	0xdc	Pulser Off	0.08	Reset T&C	Reset ADC	Reset VBD			
CRATE 0x43	Normal	0x10	0x3c7e	0x0	Normal	0 Sign Sup	0xdc	Pulser Off	0.08	Reset T&C	Reset ADC	Reset VBD			
CRATE 0x48	Normal	0x10	0x3c7e	0x0	Normal	0 Sign Sup	0xdc	Pulser Off	0.08	Reset T&C	Reset ADC	Reset VBD			
CRATE 0x49	Normal	0x10	0x3c7f	0x0	Normal	0 Sign Sup	0xdc	Pulser Off	0.08	Reset T&C	Reset ADC	Reset VBD			
EC South															
CRATE 0x44	Normal	0x10	0x3c7f	0x0	Normal	0 Sign Sup	0xdc	Pulser Off	0.12	Reset T&C	Reset ADC	Reset VBD			
CRATE 0x45	Normal	0x10	0x3c7f	0x0	Normal	0 Sign Sup	0xdc	Pulser Off	0.09	Reset T&C	Reset ADC	Reset VBD			
CRATE 0x46	Normal	0x10	0x3c80	0x0	Normal	0 Sign Sup	0xdc	Pulser Off	0.10	Reset T&C	Reset ADC	Reset VBD			
CRATE 0x47	Normal	0x10	0x3c80	0x0	Normal	0 Sign Sup	0xdc	Pulser Off	0.09	Reset T&C	Reset ADC	Reset VBD			
T & C Control Board															
T & C CTRL 0x4c	Master	0x10	0x3c81							Reset T&C CTRL					
Global Buttons															
Global	Global T&C Reset	Global ADC Reset	Global VBD Reset	Reset VBD CTRL											
Status:															
Reconnect	Archiver	ADC error word	Sun Mar 16 13:41:36 2003										Exit		

Global Buttons

Global T&C Reset Global ADC Reset Global VBD Reset Reset VBD CTRL

Status:

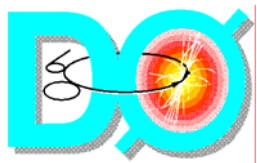
Reconnect Archiver ADC error word

Sun Mar 16 13:41:36 2003

Exit

Annotations:

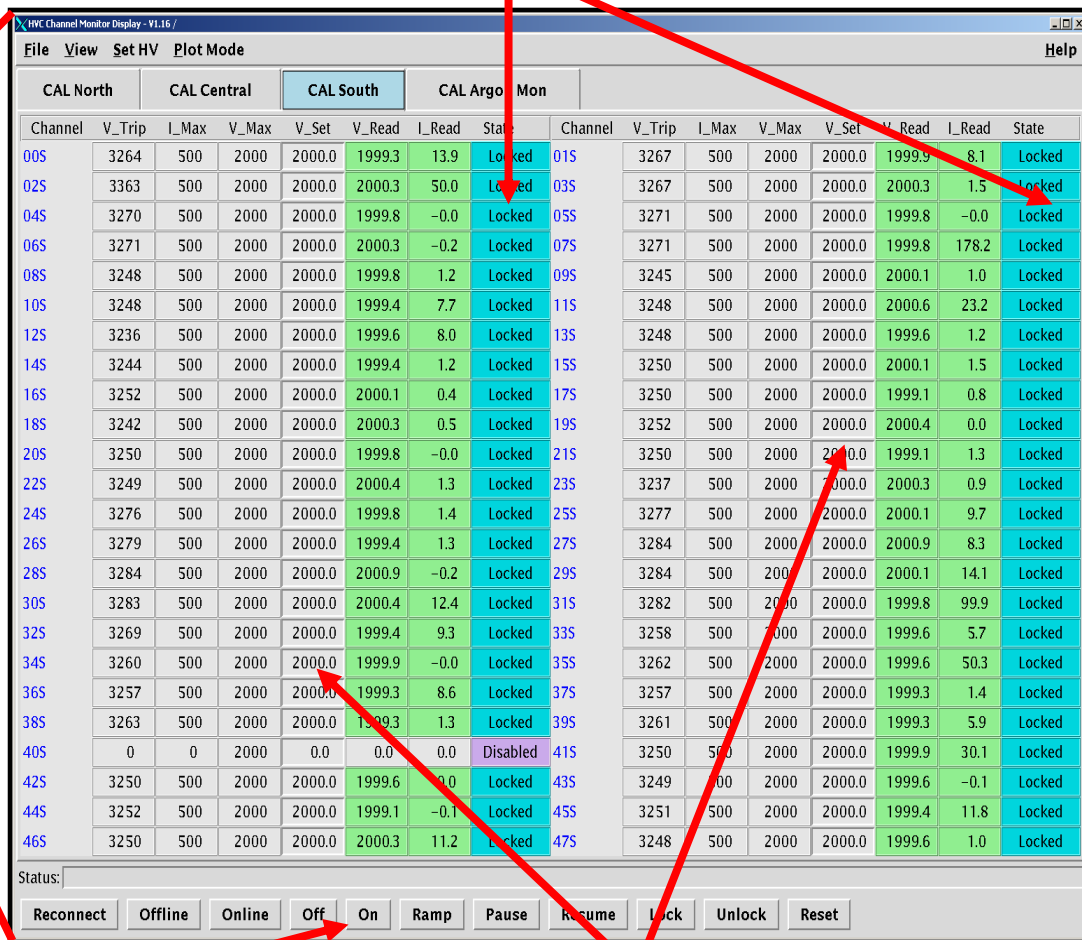
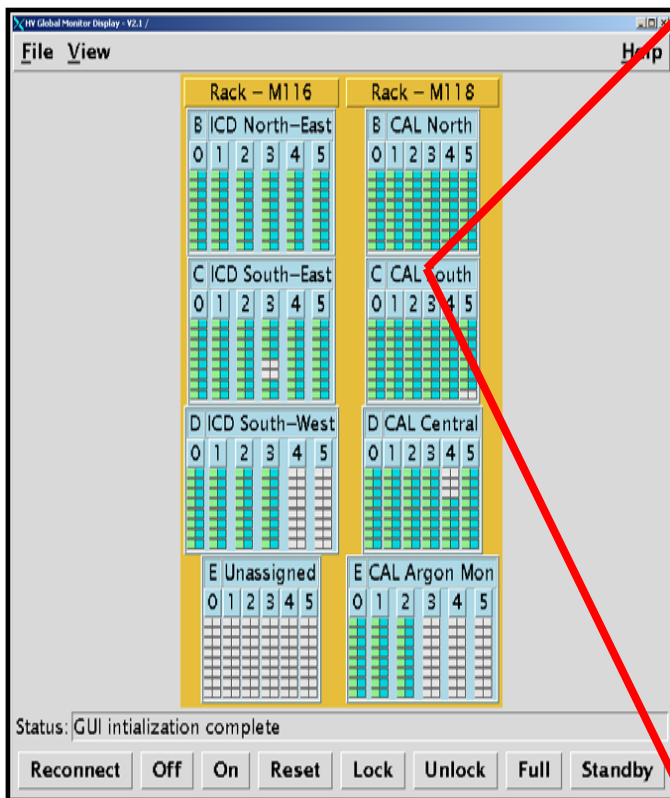
- Status word should be 0x10
- BLS Mode Normal = -3 ticks (3x132ns)
- Pulser status (Off for physics)
- Occupancy ~7% to 12%



# HV GUI

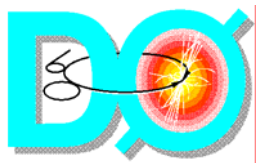
"start\_cal hv"

Change individual channel



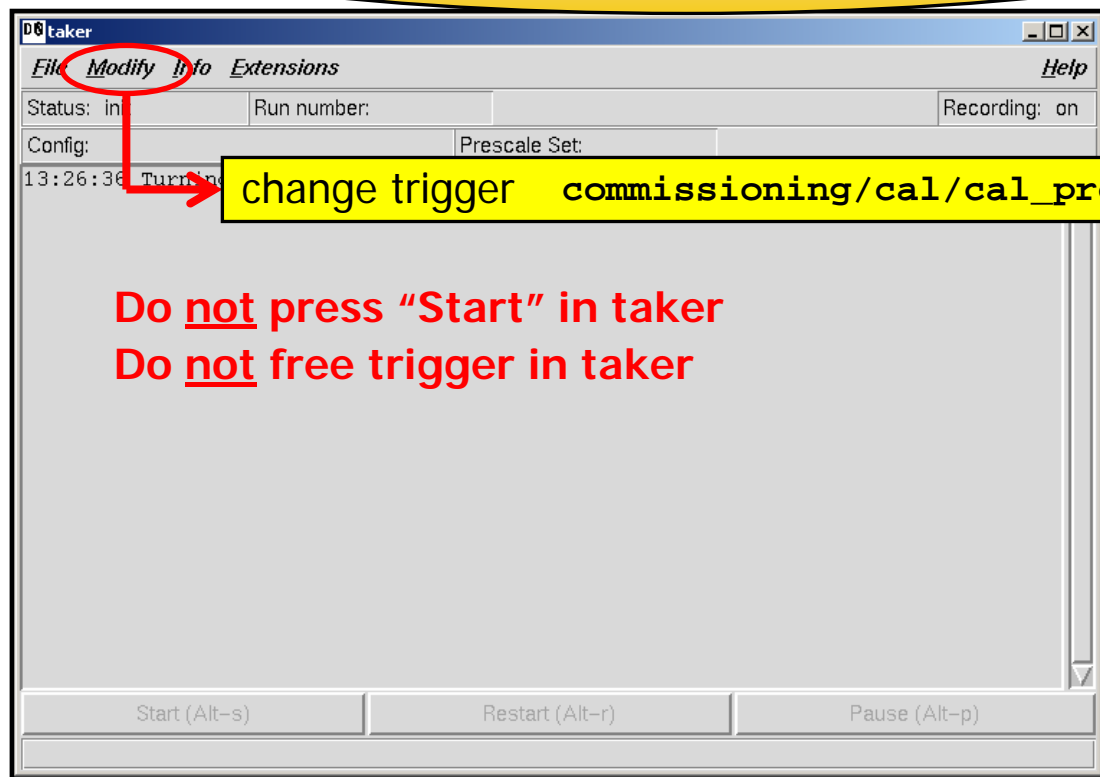
Change all channels

Can enter voltage by hand



# Before Store

**cal\_prepare\_for\_run** is a special configuration file that sets up the calorimeter for the coming store.



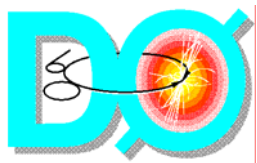
change trigger commissioning/cal/cal\_prepare\_for\_run-2.4

**Do not press "Start" in taker**  
**Do not free trigger in taker**

taker

"start\_daq taker"

Also: - check for major alarms  
- check pulsers are OFF



# During Store

Start and/or watch examines

*dq\_calor*

*llexamine*

Automatically starts with new run  
*(...still keep an eye on it)*

to start/restart:

```
start_cal dq_calor
start_cal
```

Calorimeter

Shifter restarts with each new run

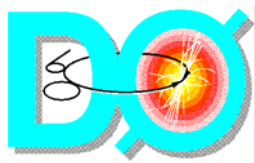
to start:

```
start_cal
start_cal llexamine
init
start
```

to stop:

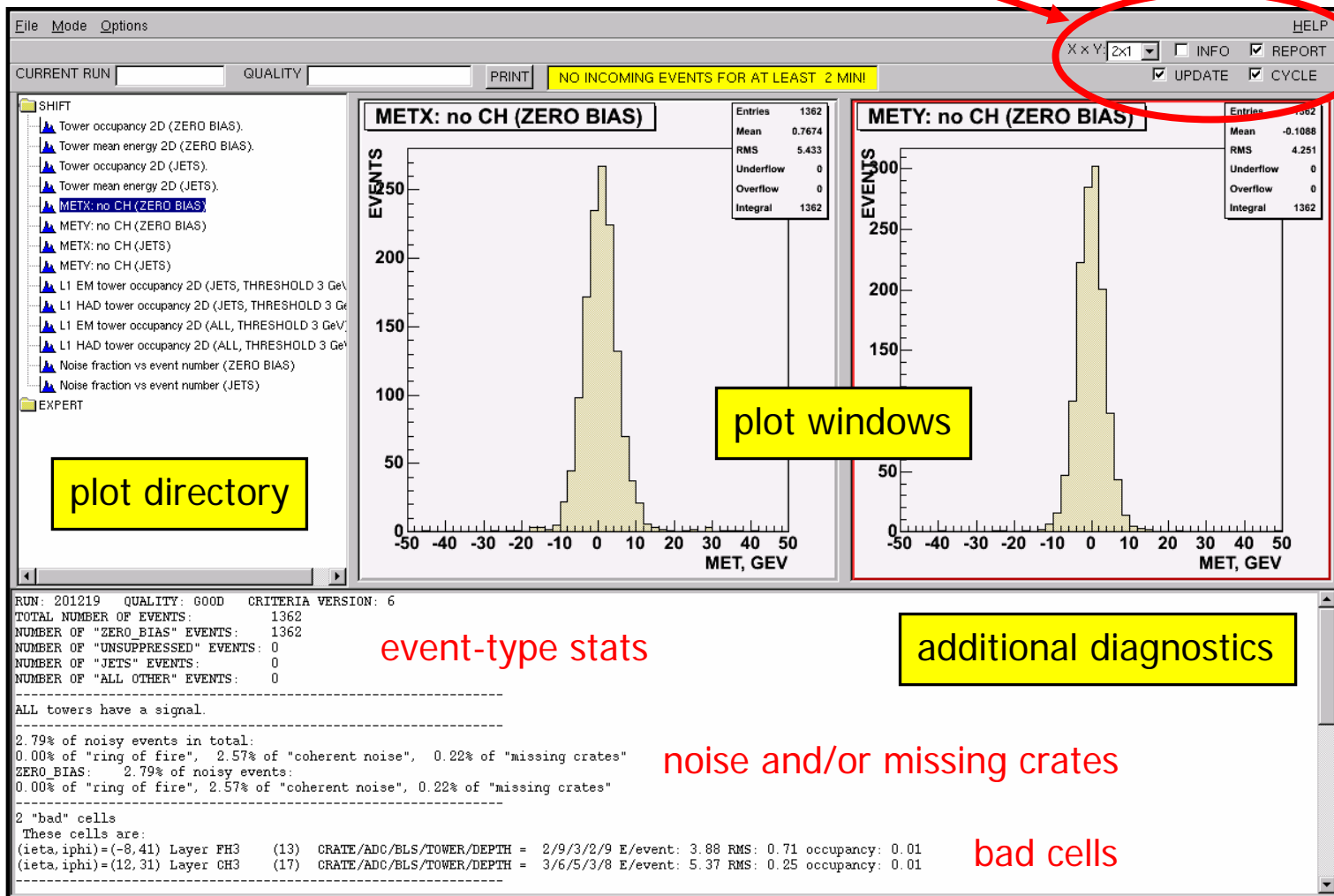
```
stop
quit
```

L1 Cal trigger

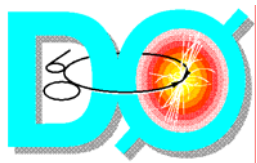


# DQ\_calor - Overview

examine behaviour settings





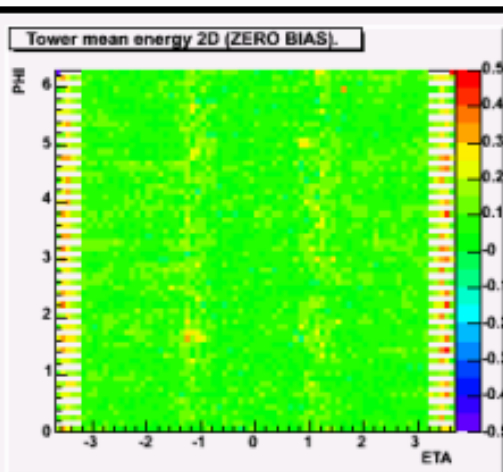
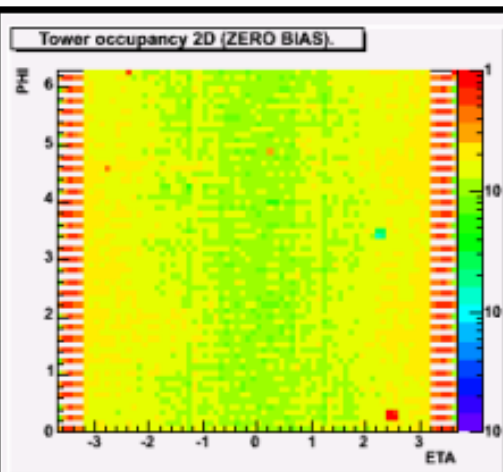


# dq\_calor (healthy example)

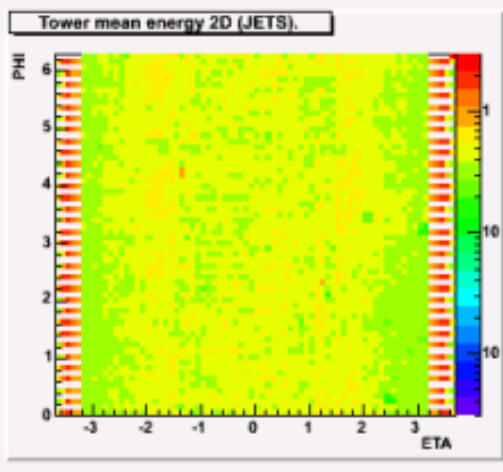
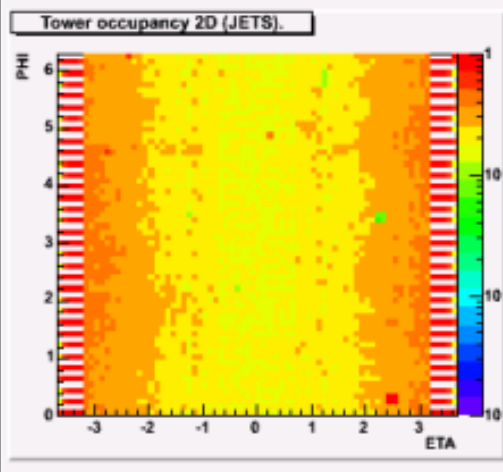
Occupancy

<Energy>

Zero bias

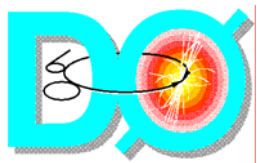


Jets



Powerful tool for shifter  
... and experts!

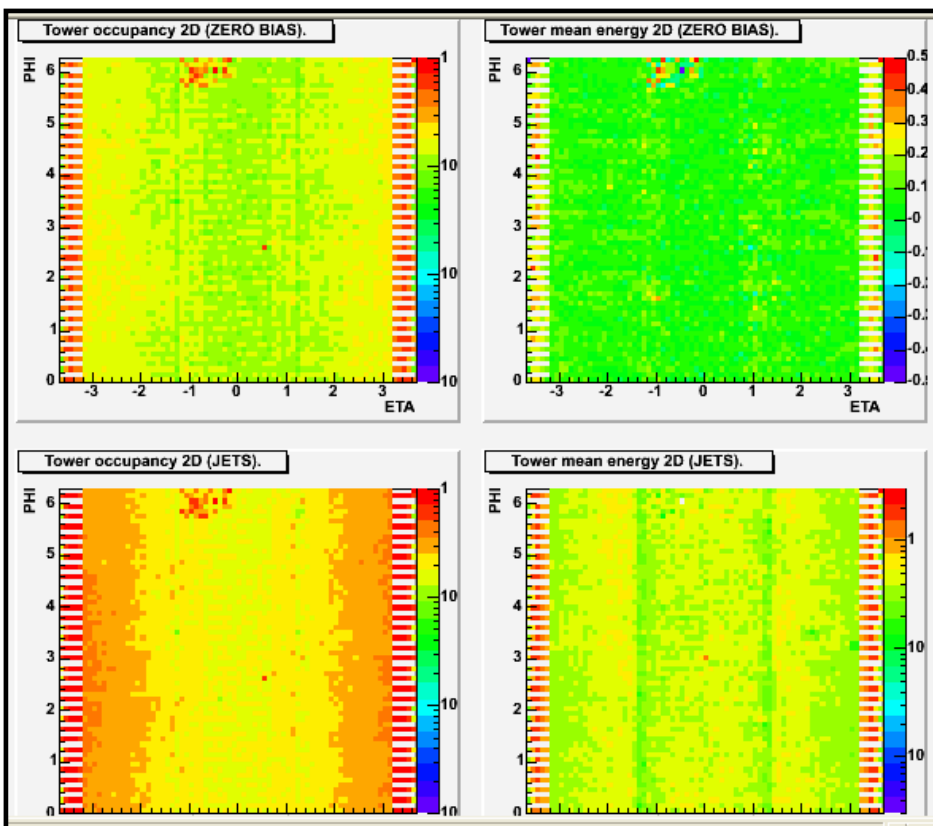
Be familiar with the plots  
Be alert – look for changes  
Paste anomalies in logbook  
Compare various plots  
Communicate with GM shifter



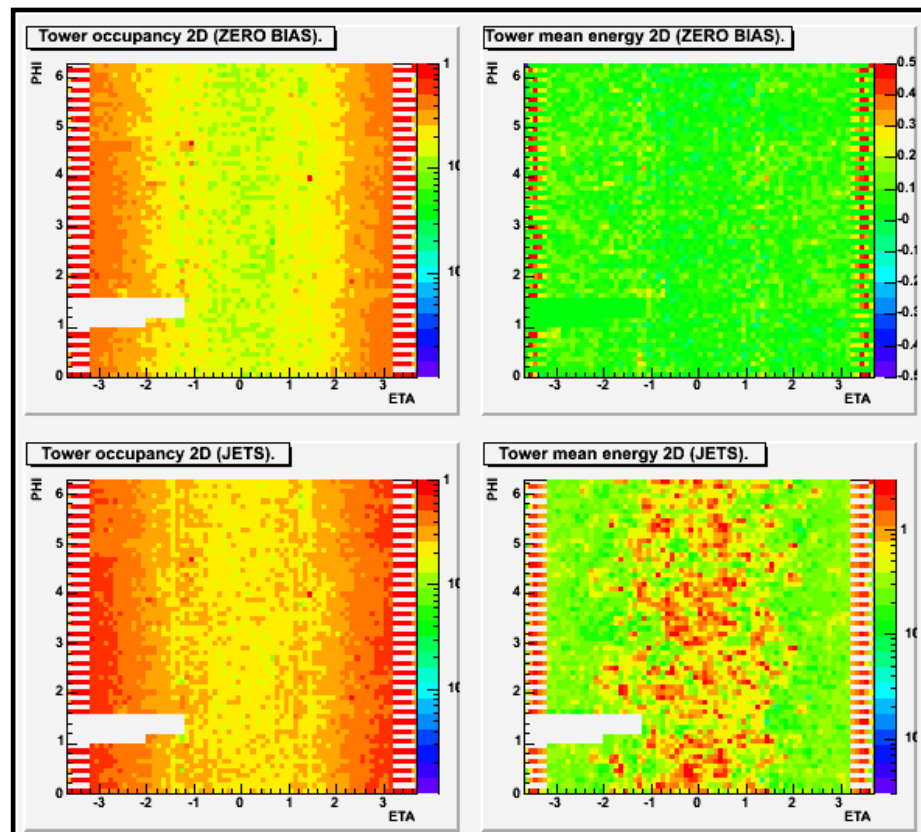
# dq\_calor (problem examples)

**Bad**

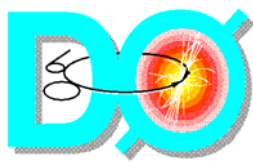
**REALLY Bad!**



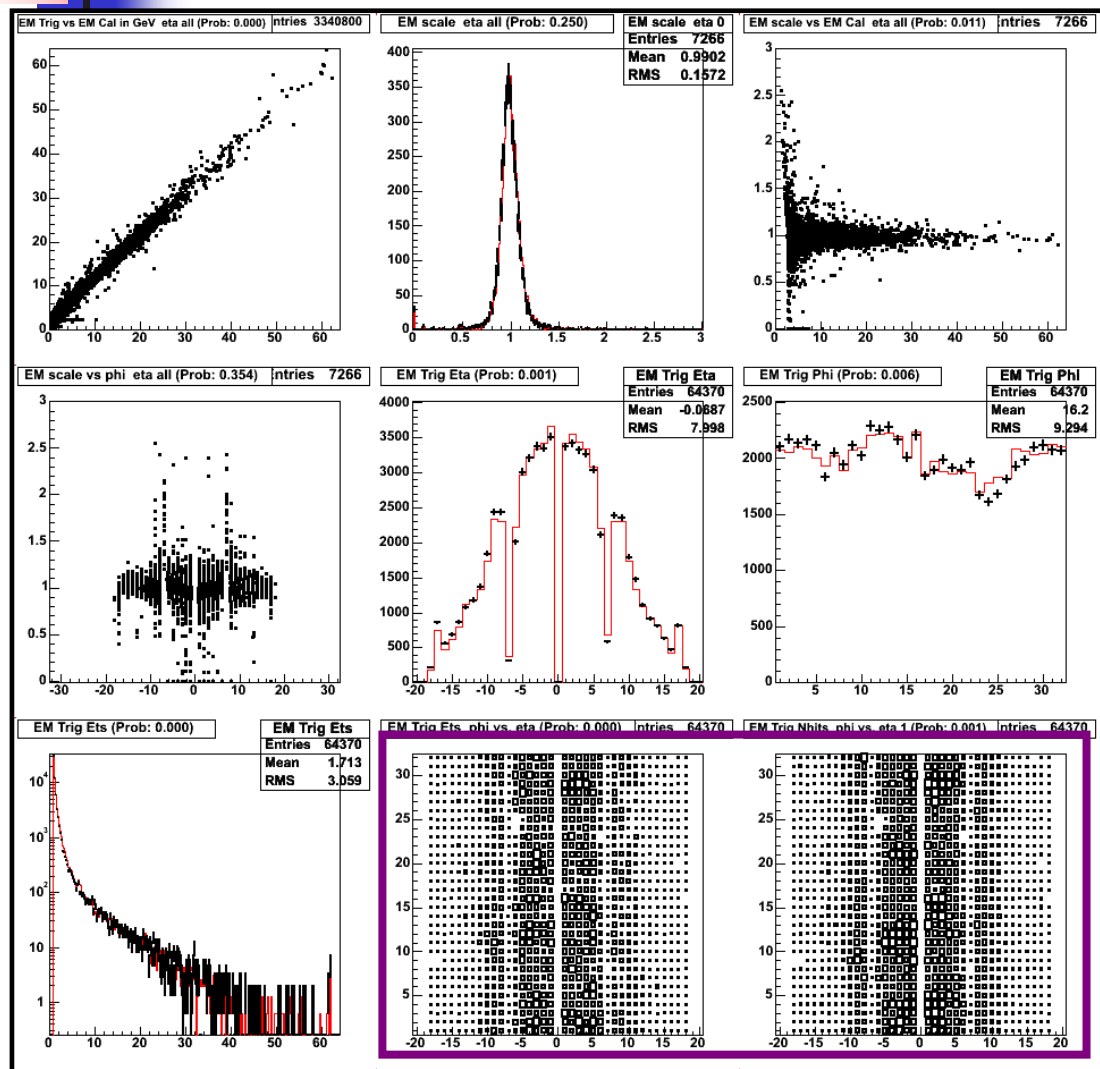
BLS cable harness problem



Problem with pedestals



# L1CalExamine



Sorry to be repetitive,

but...

Be familiar with the plots  
Be alert – look for changes  
Paste anomalies in logbook  
Compare various plots  
Communicate with GM shifter

One page for EM, one for HAD

← Trigger  $E_T$  and hits in  $(\eta, \phi)$



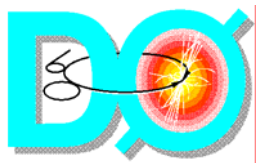
**If a CAL cell is causing problems with L3 rates, it may have to be killed.**

- Discuss with captain
- Page expert
- Have coordinates of cell ready (phys. or elec.)
- In coordination with expert:  
  

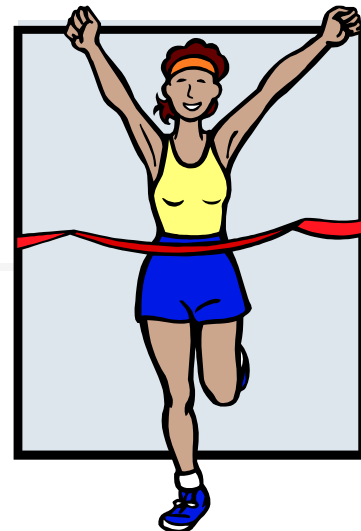
```
start_cal D0run  
start_cal
```
- Ask for run to be stopped and trigger freed
- Enter coords → Kill → Save
- Download cal\_prepare\_for\_run
- Resume running and make sure problem fixed!

```
start_cal D0run
start cal
```

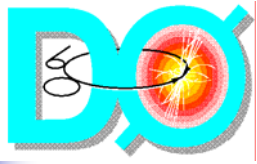
- Ask for run to be stopped and trigger freed
- Enter coords -> Kill -> Save
- Download cal\_prepare\_for\_run
- Resume running and make sure problem fixed!



# End of Run

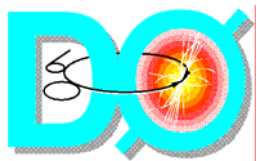


- Save histograms and paste in logbook
- Complete CALMUO checklist
- Get ready to restart I1examine
- If store ends, set MUON HV to STANDBY
- CAL HV stays up always



# Between Stores

- Perform pedestal calibration
  - No beam in machine (ask Captain)
  - If time is short take gain 8 only – otherwise take gain 1 as well
- Keep system running, monitor examines
- Help out experts
  - Assist with NLC “ramp runs”
  - During access assist with running diagnostics
  - Make entries in logbook
  - After any changes be sure pedestals are taken
- Shift cancellation
  - During extended Tevatron downtime shifts may be cancelled
  - Check with Captain, CAL expert, and MUON expert first



# Pedestal Calibration

Select "Cal"

Select "Pedestal"

File Options Help

SMT CFT/PS Cal Muon CFT test

Mon Dec 6 12:54:22 2004

Calibration Mode Pedestal Begin Run Sun Dec 5 18:44:29 2004  
Validation OFF End Run Sun Dec 5 18:53:33 2004

Selected Crates for Calib Run ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11

Processing Status ☒ ☒ ☒ ☒ ☒ ☒ ☒ ☒ ☒ ☒ ☒ ☒ Set 1

Validation Status ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Set 1

Selected Crates for DB Commit ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11

DB Commit Status ☒ ☒ ☒ ☒ ☒ ☒ ☒ ☒ ☒ ☒ ☒ ☒ Set 1

Configure DB Commit DB Collection

Run Number: 201476 Status: Run Finished

Ask for CAL and SMT crates  
Use taker to start each run  
Never stop calib run with taker!  
After runs taken, give back SMT  
Record run #'s in logbook  
If Ped Diff plot looks bad, page expert  
Link pedestals  
Paste Ped Diff plots in logbook

## How to run GUIs

```
start_cal  
@run_cal  
calib
```

Follow instructions in manual

Check Pedestals

Bad Channels

Plot Ped Diff

Locate Ped Diff+

Locate Ped Diff-

Good Pedestals

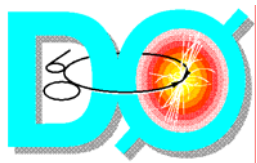
Link Pedestals

Bad Pedestals

Bad Pedestals

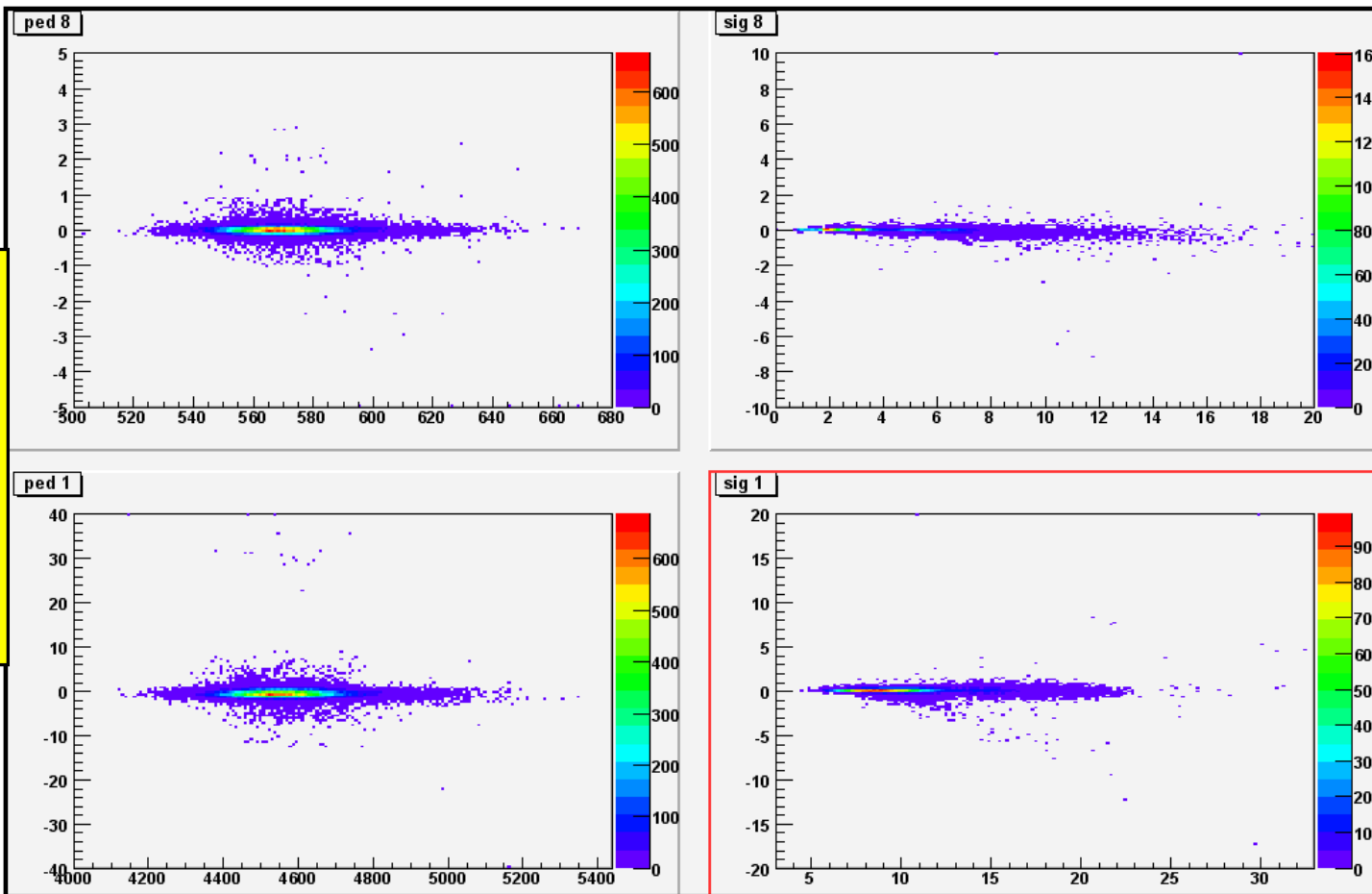
Close





# Good Pedestals

Change (ADC counts)

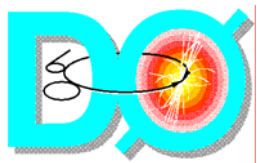


Gain 8

Gain 1

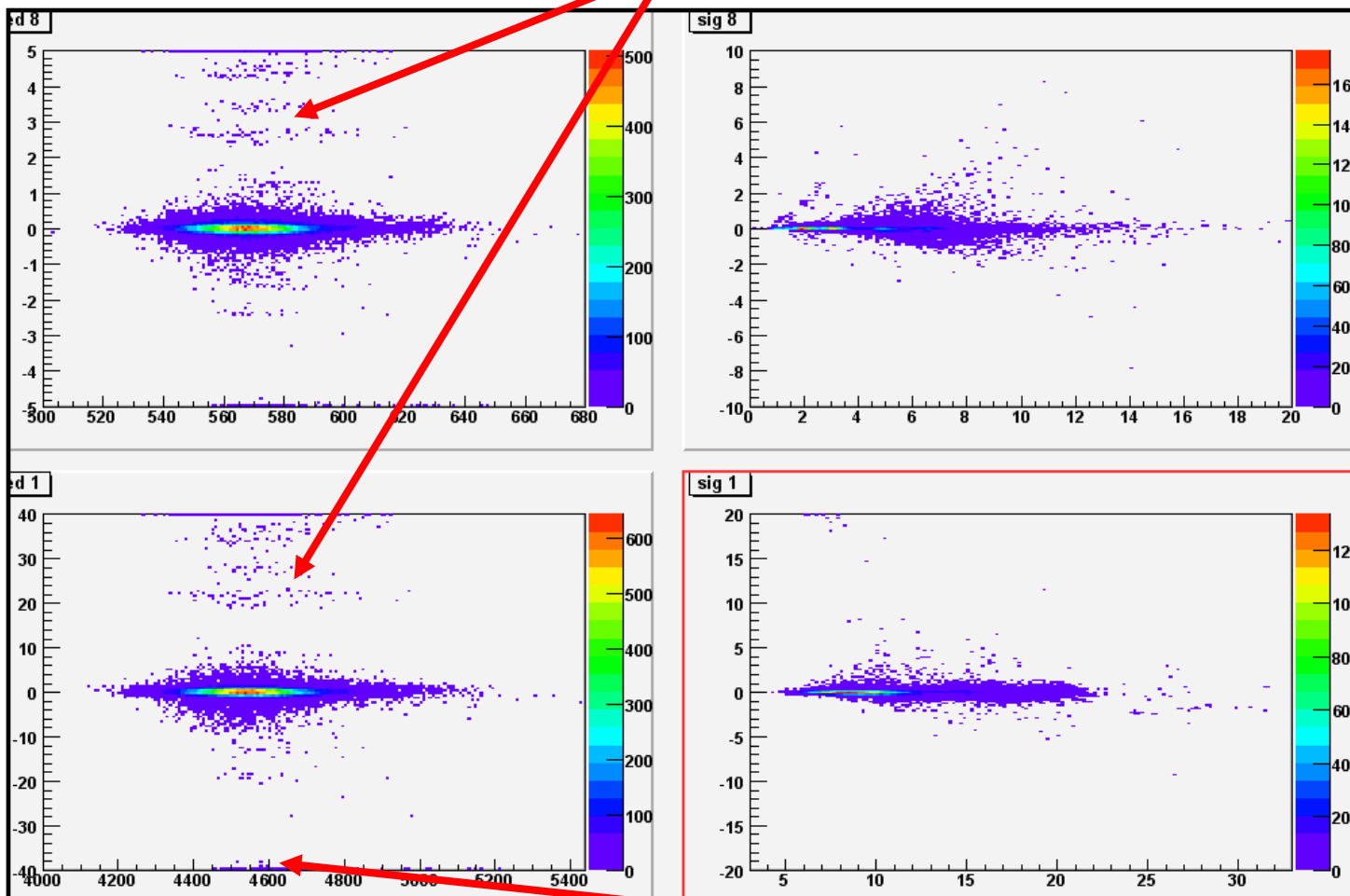
Pedestal Value

Pedestal RMS

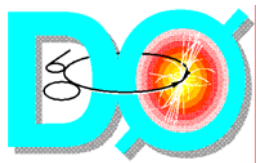


# Post-repair Pedestals

Typical of hardware change



Watch edges

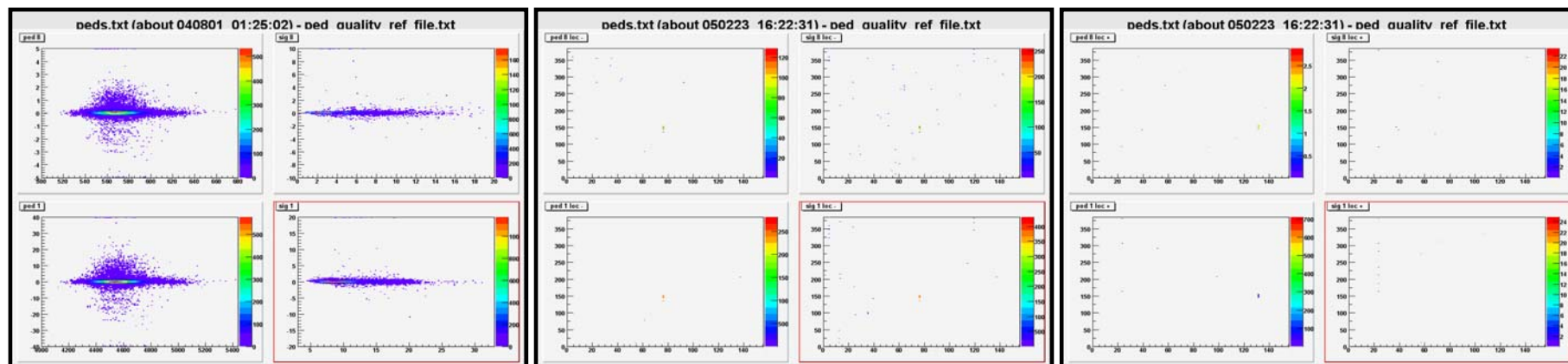


# Example Log Entry

Starting calorimeter pedestal calibration run.

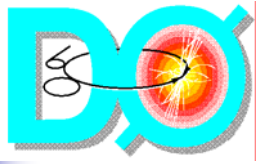
SMT is off.

Run 195816 x8, run 195817 x1. These two runs went OK.



Bad Channels:

3 1 3 0 6 578.11 63.37 576.80 55.25 4567.73 18.30 4 E-ped8  
4 9 5 2 11 579.97 99.99 575.42 50.72 4586.80 66.11 4 E-ped8  
Calibration looks OK to me so I linked the pedestals.



# Summary

- All details of shifter duties and troubleshooting can be found in the CAL shifter's guide (white binder or web)
- If in doubt... page expert!